Claim Amendments

Please amend claims 1, 2, 3, 6, 12, 13, 16 and 17 as follows.

Please cancel claim 7 as follows.

Claims as Amended

1. (currently amended) A method of forming a SIMS monitor device for determining a <u>2-dimensional</u> doping profile of a semiconductor device structure comprising the steps of:

providing a plurality of regularly repeating semiconductor structures including a doping profile to form a monitor device including at least one layer of the regularly repeating semiconductor structures:

planarizing the monitor device through a thickness of the regularly repeating semiconductor structures to reveal a target surface overlying the doping profile to form a monitor pattern; and,

sputtering the target surface over a sputtering area including the monitor pattern through a thickness thereof while simultaneously detecting and counting over a time interval at least one type of species ejected from the target surface according to a secondary ion mass spectroscopy procedure (SIMS) ; and,

determining a 2-dimensional doping profile for an individual semiconductor structure.

- 2. (currently amended) The method of claim 1, wherein the monitor pattern further comprises a regularly repeating pattern in at least two <u>planar</u> dimensions <u>of the doping profile</u>.
- 3. (currently amended) The method of claim 1, wherein the planarizing step further comprises a chemical mechanical polishing (CMP) step.
- 4. (original) The method of claim 3, wherein the target surface comprises a polysilicon substrate including the doping profile.
- 5. (original) The method according to claim 1, wherein the monitor device further comprises multiple layers of the regularly repeating semiconductor structures.
- 6. (currently amended) The method of claim $\underline{5}$ 4, wherein the steps of planarizing and sputtering are carried out for at least one layer of the multiple layers.
- 7. cancelled

- 8. (original) The method of claim 1, wherein the target surface has an area sufficient to include the sputtering area.
- 9. (original) The method of claim 1, wherein the regularly repeating semiconductor structures include CMOS structures and memory structures.
- 10. (original) The method of claim 1, wherein the monitor pattern forms regularly repeating rows.
- 11. (original) The method of claim 1, wherein the monitor pattern forms regularly repeating rows of regularly repeating rectangles.
- 12. (currently amended) A monitor device for analysis of a <u>2-dimensional</u> doping profile of an individual semiconductor device structure according to a SIMS procedure comprising:
- a planar<u>ized</u> surface intersecting a plurality of regularly repeating semiconductor structures <u>including comprising</u> a doping profile to form a target surface said regularly repeating semiconductor structures included in at least one layer of the monitor device said monitor device being mountable in a secondary

ion mass spectrometer for sputtering the target surface through a thickness to determine the doping profile a 2-dimensional doping profile of an individual semiconductor structure.

- 13. (currently amended) The monitor device of claim 12, wherein the target surface further comprises a regularly repeating pattern in two planar dimensions of the doping profile formed by the planarized surface intersecting a plurality of regularly repeating semiconductor structures.
- 14. (original) The monitor device of claim 12, wherein the target surface is disposed at about the start of the doping profile extending through a thickness perpendicular to the target surface.
- 15. (original) The monitor device of claim 12, wherein the monitor device further comprises multiple layers of the regularly repeating semiconductor structures.
- 16. (currently amended) The monitor device of claim 12, wherein the target surface has an area sufficient to includes a sputtering area.

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- 17. (currently amended) The monitor device of claim $\underline{12}$ $\underline{15}$, wherein the target surface forms a rectangular shape with a length of about 50 microns to about 300 microns on a side.
- 18. (original) The method of claim 12, wherein the regularly repeating semiconductor structures include CMOS structures and memory structures.
- 19. (original) The monitor device of claim 13, wherein the regularly repeating pattern approximates regularly repeating rows.
- 20. (original) The monitor device of claim 13, wherein the regularly repeating pattern approximates regularly repeating rows of rectangular shapes.